Use of sewage sludge ash (SSA) in the production of cement and concrete – a review

Abstract

The use of recycled sewage sludge ash (SSA) in Portland cement and concrete has attracted a lot of global interest due the increase in sludge production and the limitation of land availability where it is used as a soil conditioner. These are in addition to rising environmental concerns. The major components of SSA are SiO2, CaO, Al2O3, Fe2O3, MgO and P2O5. These compounds, in theory, make SSA a good pozzolanic material because when finely ground, SSA is found to be cementitious. Thus it can be used as cement replacement in Portland cement and concrete. Some of the advantages include reduction in waste disposal costs, provision of excellent sustainable practices, conservation of the environment provision of partial solution to land limitation problem for landfill. Some of its disadvantages are in terms of pozzolanic activity and strength coupled with high water demand which could be solved by adequate modification and treatment. This paper reviews the various use of SSA and summarises the progress made in the development of SSA as a partial replacement for Portland cement and concrete